

## **Claims**

What is claimed is:

1.A rotary-wing type mobile telephone, comprising a mobile telephone body and a rotary wing, the rotary wing is pivotally connecting to the mobile telephone body by a rotating shaft, wherein the rotating shaft comprises:

A spindle provided at the center of the rotating shaft;

A fixing member hitched on the spindle and fixedly connected with the rotary wing of mobile telephone;

A rotating member pivotally provided on the spindle and fixedly connected with the mobile telephone body;

A limit mechanism provided between the fixing member and the rotating member, which limits the rotary wing in the range of rotating through 180 degrees clockwise or counterclockwise.

2.The rotary-wing type mobile telephone as claimed in claim 1, wherein the rotary-wing type mobile telephone also includes a LCD screen provided on the outside or inside surface of the rotary wing.

3.The rotary-wing type mobile telephone as claimed in claim 1, wherein the spindle of the rotating shaft is hollow, through which passes an electrical connecting cable or a flexible printed board provided between the rotary wing and the body.

4.The rotary-wing type mobile telephone as claimed in claim 1, wherein the lower end of the rotary wing of mobile telephone is provided with a first handset, and the upper end is provided with a second handset, the two handsets being connected electrically with a sound signal output device of the mobile telephone body, and the rotary-wing type mobile telephone also has a sound signal switching device which is provided between the sound signal output device, the first handset and the second handset, and switches the outputs sound signals to the first handset or the second handset according to the state of the rotary wing.

5.The rotary-wing type mobile telephone as claimed in claim 1, wherein the outer profile of the rotary wing is smaller than that of the body, and the body is formed with a projection outside the closed profile of the rotary wing, the projection being flush with the rotary wing in a closed state and provided thereon with a plurality of functional keys, which keys can be used to operate the mobile telephone when the rotary wing is closed.

6.The rotary-wing type mobile telephone as claimed in claim 5, wherein there is

a first acute angle formed between the rotating shaft and the horizontal datum plane of the mobile telephone, and an equal second acute angle respectively formed between the rotary wing and the rotating shaft and between the body and the rotating shaft, the first acute angle and the second acute angle being the complementary angles to each other, and the rotary wing which is rotated to open form an angle with the body based on the above-mentioned mounting structures.

7. The rotary-wing type mobile telephone as claimed in claim 2, 3, 4, 5 or 6, wherein the spindle of the rotating shaft is formed at both ends thereof with a first positioning portion and at mid-section thereof with a rotary portion; the fixing member is hitched on the first positioning portion of the spindle; the rotating member is pivotally provided on the rotary portion of the spindle; the limit mechanism comprises a limit block provided on the fixing member and a rotatable limit component pivotally provided on the rotary portion of the spindle and provided with a radially protruding first protruding block; the rotating member is coupled to the rotatable limit component and leaves some rotating space, when the rotary wing drives the rotating member rotating, it further drives the rotatable limit component rotating, and when the first protruding block provided on the rotatable limit component is blocked by the limit block provided on the fixing member, the rotary wing has rotated through 180 degrees.

8. The rotary-wing type mobile telephone as claimed in claim 7, wherein the rotatable limit component is ring-shaped rotatable limit member, the rotating member is formed at an end surface thereof adjacent to the rotatable limit member with an axially extending ring-shaped protrusion which is provided with an opening, the first protruding block of the rotatable limit member is embedded in the opening whose width is larger than that of the first protruding block; when the rotating member rotates about the spindle, the ring-shaped protrusion comes into contact with the protruding block to drive the rotatable limit member rotating.

9. The rotary-wing type mobile telephone as claimed in claim 7, wherein the rotatable limit component in turn comprises a first rotating member, a rotatable limit member and a second rotating member; the second rotating member is fixedly connected to the rotating member and formed at the interior circumference thereof with a plurality of first open slots; the first protruding block of the rotatable limit component is formed on the rotatable limit member which is formed at the interior circumference thereof with a plurality of second open slots in correspondence with

the locations of the first open slots; the first rotating member is provided with a plurality of axially extending third protruding blocks which are inserted into the first open slots formed on the second rotating member through the second open slots formed on the rotatable limit member; the circumferential width of the second open slots is larger than that of the third protruding blocks; when the rotary wing drives the rotating member rotating, it further drives the first rotating member and the second rotating member rotating and simultaneously drives the rotatable limit member rotating.

10. The rotary-wing type mobile telephone as claimed in claim 9, wherein the second rotating member is formed thereon with a plurality of second protruding blocks and the rotating member is correspondingly formed with a plurality of slots, the second protruding blocks are inserted into the slots, so that the second rotating member is fixedly connected to the rotating member.

11. The rotary-wing type mobile telephone as claimed in claim 1, 2, 3, 4, 5 or 6, wherein the rotating shaft also comprises a locking member which is provided the side of the rotating member away from the fixing member and can lock the rotary wing of mobile telephone in a closed or opened position.

12. The rotary-wing type mobile telephone as claimed in claim 11, wherein the locking member comprises a self-locked positioning member and two elastic slices covered each other, the spindle is provided with a second positioning portion, the self-locked positioning member and the two elastic slices are in turn provided at the side of the rotating member away from the fixing member and hitched on the second positioning portion of the spindle to be fixed to the spindle relatively; the self-locked positioning member is provided at the side opposite to the rotating member with two projections which are radially symmetrically arranged at 180 degrees, the corresponding side of the rotating member is provided with two grooves corresponding to the two projections.

13. The rotary-wing type mobile telephone as claimed in claim 1, wherein the front shell of the mobile telephone body is provided with a sunken positioning groove corresponding to the rotating shaft, the depth of the positioning groove being coinciding with the height of the rotating shaft, and the rotating shaft is provided in the positioning groove and fixes the rotating member to the positioning groove, and the back shell of the rotary wing of mobile telephone is fixed to the fixing member of the rotating shaft.

14. A controlling method of mobile telephone for controlling the operation of a mobile telephone provided on the mobile telephone body with a rotary wing, wherein comprises following steps:

a. Setting a step of opening the mobile telephone, to make the rotary wing of mobile telephone rotate about a rotating shaft at a certain angle, thus rotating the rotary wing away from a closed position relative to the mobile telephone body;

b. Setting a step of limiting and locking, to allow the rotary wing to rotate clockwise or counterclockwise in a range of 180 degrees, and be self-locked in an opening position when the rotary wing is close to 180°;

c. Setting a step of rotating the rotary wing back, to make the rotary wing rotate from the opening position back to closed position along the original path.

15. The controlling method of mobile telephone as claimed in 14, wherein further comprises a step of controlling the displaying of the LCD screen provided on the rotary wing of mobile telephone.

16. The controlling method of mobile telephone as claimed in 15, wherein the displaying signals of the LCD screen is transmitted from the mobile telephone body through a cable provided at the center of the rotating shaft to the LCD screen.

17. The controlling method of mobile telephone as claimed in 14, wherein setting the step of limiting and locking, the rotary wing form an angle with the body when the rotary wing is in the opening position.

18. The controlling method of mobile telephone as claimed in 14, wherein further comprises a step of setting the displaying direction of LCD screen, to make the LCD screen provided on the rotary wing self flip over when the rotary wing is switched between the opening position and the closed position.

19. The controlling method of mobile telephone as claimed in 14, wherein further comprises a step of switching the working state of the handsets, to make the working states of the first handset and the second handset provided on the rotary wing of mobile telephone be self-switched when the rotary wing is switched between the opening position and the closed position.